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PROPOSED CLAIM AMENDMENTS

1 (Proposed Amendment). A method to diagnose equipment failures using an integrated approach of case-based reasoning and reliability analysis, comprising the steps of:

constructing a statistical failure probability database, comprising a statistical failure probability for equipment, and a statistical component failure probability for each of a plurality of given hardware-based components of said equipment;

maintaining a case base database for the equipment, having a plurality of case failure records, each case failure record having an equipment identification data, a failed component identifier data, a failure description text data, and a solution record data;

calculating, for each of said plurality of components, a conditional statistical probability of said component having a failed state given that said equipment has a failed state;

receiving an equipment problem description from a user, said description including a problem equipment identifier data and a problem description text;   ı

for each component in the equipment, calculating failure probability based on at least one of historical failure data and published failure data of the components;

for each of said components, calculating a case-based probability of said component having a failed state based on matching said problem description text assuming that a component fails, using case-based reasoning against the failure description text data of said plurality of case failure records;

for each of said components, generating an overall component failure probability based on combining the component's case-based calculated probability of having a failed state and the conditional statistical probability of said component having a failed state given that said equipment has a failed

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state ~~probabilities to compute an overall failure probability given historical~~
~~failure published failure data, and said problem description~~; and

generating ~~composing~~ a list of component troubleshooting
recommendations based on ~~ranked by~~ said overall failure probabilities
~~computed for each component,~~ and retrieving corresponding ~~past~~ solutions
data from said case base database.

2 -5 (Canceled).

6 (Proposed Amendment). A decision support system to diagnose equipment
failures using an integrated approach of case-based reasoning and reliability
analysis, comprising:

a statistical failure probability database, comprising a statistical failure
probability for equipment, and a statistical component failure probability for
each of a plurality of given hardware-based components of said equipment;

a case base maintenance management system database for the
equipment having a plurality of case failure records, each case failure record
having an equipment identification data, a failed component identifier data, a
failure description text data, and a solution record data;

a decision support system database;

a decision support system client for receiving an equipment problem
description from a user, said description including a problem equipment
identifier data and a problem description text;;

a decision support system server receiving input from the decision
support system client and accessing said case base maintenance
management system database and said decision support system database,
said decision support system server including

a real-time decision support system engine for calculating failure
probability for each component in the equipment, based on said equipment
problem description from the user,

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arranged to calculate, for each of said plurality of components, a conditional statistical probability of said component having a failed state given that said equipment has a failed state,

arranged to calculate a case-based probability of said component having a failed state based on matching said problem description text against the failure description text data of said plurality of case failure records, and

arranged for each of said components, to generate an overall component failure probability based on the component's case-based calculated probability of having a failed state and the conditional statistical probability of said component having a failed state given that said equipment has a failed state;

~~at least one of historical failure data and published failure data of each of the components, and for calculating a probability of matching said equipment problem description for each component, assuming that a component fails, using case-based reasoning, and for each component, combining said calculated probability of matching said equipment problem description for each component to compute an overall failure probability for each component given said at least one of the historical failure data and published failure data of each of the components and said equipment problem description~~ and

arranged to generate ~~composing~~ a list of component recommendations ranked by overall failure probabilities computed for each component, and retrieving corresponding past solutions from the case base maintenance management system database; and

a case base update processor for copying closed failure transaction records from the case base maintenance management systems database, and extracting information from these transaction records to obtain attributes required by said real-time decision support system engine, and indexing each

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closed failure transaction record by a failed component identification and a number of occurrence of failure of that particular component.

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